LAKE MEAD WATER QUALITY FORUM
ALGAE TASK FORCE UPDATE

What A Difference 10 Years Makes
What Will The Next 10 Years Bring?

TASK FORCE MEMBERS

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Algae Task Force

NEW! **Algae Task Force Summary — What Ten Years Has Taught Us**

The Algae Task Force (ATF) was originally formed as a subcommittee of the Lake Mead Water Quality Forum (Forum) to investigate the causes of a green algae bloom that occurred throughout Lake Mead in 2001. To be proactive, the Lake Mead Water Quality Forum reconvened the Algae Task Force in 2010 as a result of a golden algae bloom at Lake Las Vegas.

The Algae Task Force is composed of a variety of local, state and federal agencies, whose roles and responsibilities as related to the monitoring and reporting plan have been agreed upon as outlined below:

- Develop and distribute the Blue Green Algal Toxins Monitoring and Reporting Plan;
- Coordinate and conduct monitoring throughout Lake Mead, Lake Mohave and the Las Vegas Wash in accordance with this Plan;
- Provide regular updates of analytical information to the appropriate agencies and Lake Mead Water Quality Forum;
- Develop and distribute a Fact Sheet and/or additional outreach materials deemed necessary to raise public awareness regarding blue-green algae;
- Raise public awareness of and promote the use of Best Management Practices (BMPs) to minimize nutrients entering waterways;
- Respond to media inquiries seeking general information on algal blooms;
- Take action necessary to ensure that public health and safety is maintained as well as that of terrestrial and aquatic wildlife.

Forum Home Page

Last updated 03/07/2013 16:33:40

www.ndep.nv.gov/forum/algae.htm

PREVIOUS PRESENTATIONS

- 2011 Tri-State Seminar
- January 2012 – LMWQF
- February 2012 – SQMC
- 2012 Lake Mead Symposium
- 2013 Lake Mead Water Quality Forum

2010 ALGAE TASK FORCE

- Reviewed past reports and made observations

- Present effort is to use data collected to help evaluate the water quality as a result of the lowering of Lake Mead's surface water elevations

Las Vegas Bay/Boulder Basin

- 2001 Task Force made recommendations for 10 activities to control future algae blooms
- 2010 Task Force addressed each one in the final report (www.ndep.nv.gov/forum/algae.htm)

NEWSPAPER ARTICLES

DATE	PUBLICATION	PAGES	TITLE
1/30/1955	LVRJ	2:3-6	Lake Mead Level at 1101 Feet, Lowest since 1938…..
5/11/1964	LVRJ	1:1-8	Colorado Water Curtailed By Udall
6/7/1964	LVRJ	13:3-6	Lake Lowering Effects Studied
1/8/1965	LVRJ	9:4-8	Photo at LV Wash showing low lake level
5/4/1967	LVRJ	1:4-8	Recreation Area Periled (Algae in Lake Mead)
11/12/1967	Nevadan	pp 4-5	Lake Mead Pollution Neglect
11/19/1967	Nevadan	pp 24-25	Lake Mead Pollution Neglect - part 2
5/12/1968	Nevadan	p 3	What's New On Vegas Wash Pollution
6/23/1968	Nevadan	pp 4-5	We Can Stop Polluting Lake Mead Now
2/15/1970	Nevadan	pp 30-31	Foxes in charge of the chicken coop
9/13/1970	Nevadan	pp 30-31	Las Vegas Valley sewage
4/4/1971	Nevadan	pp 4-5	How sick is Vegas Wash
5/7/1982	Sun	pp 18-19	Our $60 Million Tidy Bowl
8/20/1982	Sun	p 13	State Commission Delays Approval On Las Vegas Wastewater
9/10/1982	LVRJ	1A	Officials Claim Lake Standards Too Costly
9/10/1982	Sun	p 15	State Oks Water Quality Standards
1/20/1997	LVRJ	online page	Eroding Wetlands May Affect Water Quality

REFERENCES

REFERENCE NAME	DATE
A Mathematical Model of Primary Productivity & Limnological Patterns in Lake Mead	Jan-72
Addendum To The Environmental Assessment Annex B LV Wash/Bay Pollution Abatement Project	Jul-74
Analysis of the WQS Proposed by NDEP – Main Report and Appendices	Aug-87
Appendices for Water Quality Standards Study Report	Mar-82
Comprehensive Survey of Sedimentation in Lake Mead 1948-49	Feb-57
Draft Water Quality Standards Study Report	Mar-82
Environmental Assessment Las Vegas Wash and Bay Pollution Abatement Project Annex B	Nov-72
Evaluation of Alternates for Water Pollution Control and Resource Management Phase III LV Wash/Bay Pollution Abatement Project Annex C	Mar-72
Evaluation of TMDL & Associated WQS Attainment for LV Wash, Bay, & Lake Mead	Oct-03
Final Report - Lake Mead Monitoring Program	Jul-76
Future Quantity and Quality of Colorado River	Mar-65
Lake Mead Water Quality History: Technical Report No. 4	Nov-80
Las Vegas Bay Study - Report to the Enforcement Division, U.S. EPA, Region IX	Jan-73
Las Vegas Valley Water Quality Program Final Annual Progress Report	Oct-80
Las Vegas Wash & Lake Mead Proposed WQS Revisions/Rationale	May-87
Microbiological Limnological, Nutrient Evaluations of LV Wash-Bay System	Feb-02
Micronutrients and Biological Patterns in Lake Mead	Jan-71
Physical Limnology of Lake Mead	Oct-51
Report on Pollution in Las Vegas Wash and Las Vegas Bay	Jan-67
Report on Wastewater Disposal	Oct-76
Report to Governor & Legislative Commission Final Alternate Plan LV Wash-Bay Pollution Abatement Project	Jul-74
Technical Assistance Report to the State of Nevada Department of Health, Welfare, and Rehabilitation	May-70
The 1963-64 Lake Mead Survey	Aug-70
The Effect of Las Vegas Wash Effluent Upon The Water Quality In Lake Mead	Jan-71
The Issues with Banning Phosphate Detergents in Clark County	Jan-78
The Limnology In Reservoirs On The Colorado River Technical Report No. 11	Sep-83
Water Quality Study of Lake Mead Report No. ChE-70	Nov-67

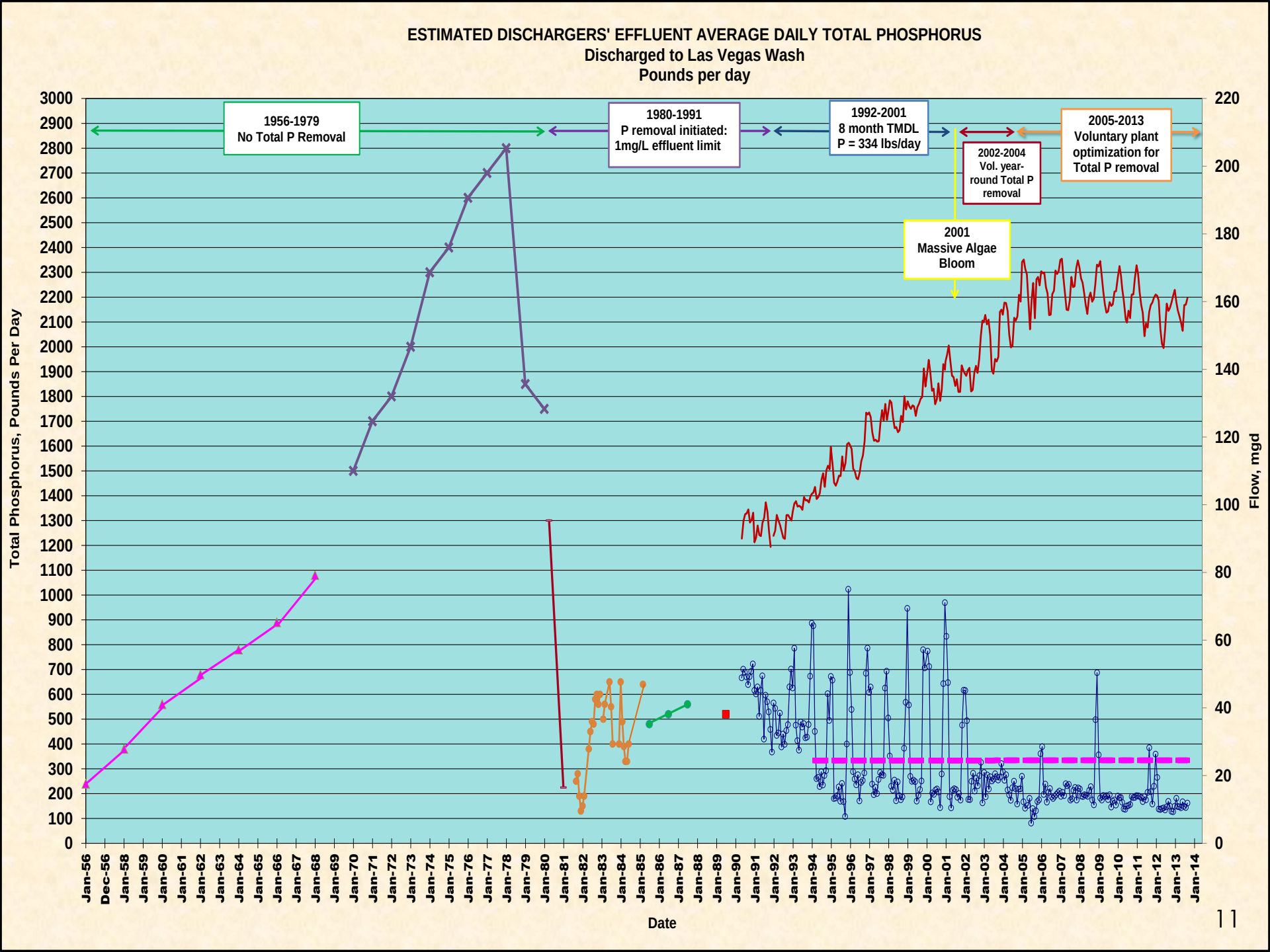
If anyone has additional articles or references please add to these lists

Lake Las Vegas

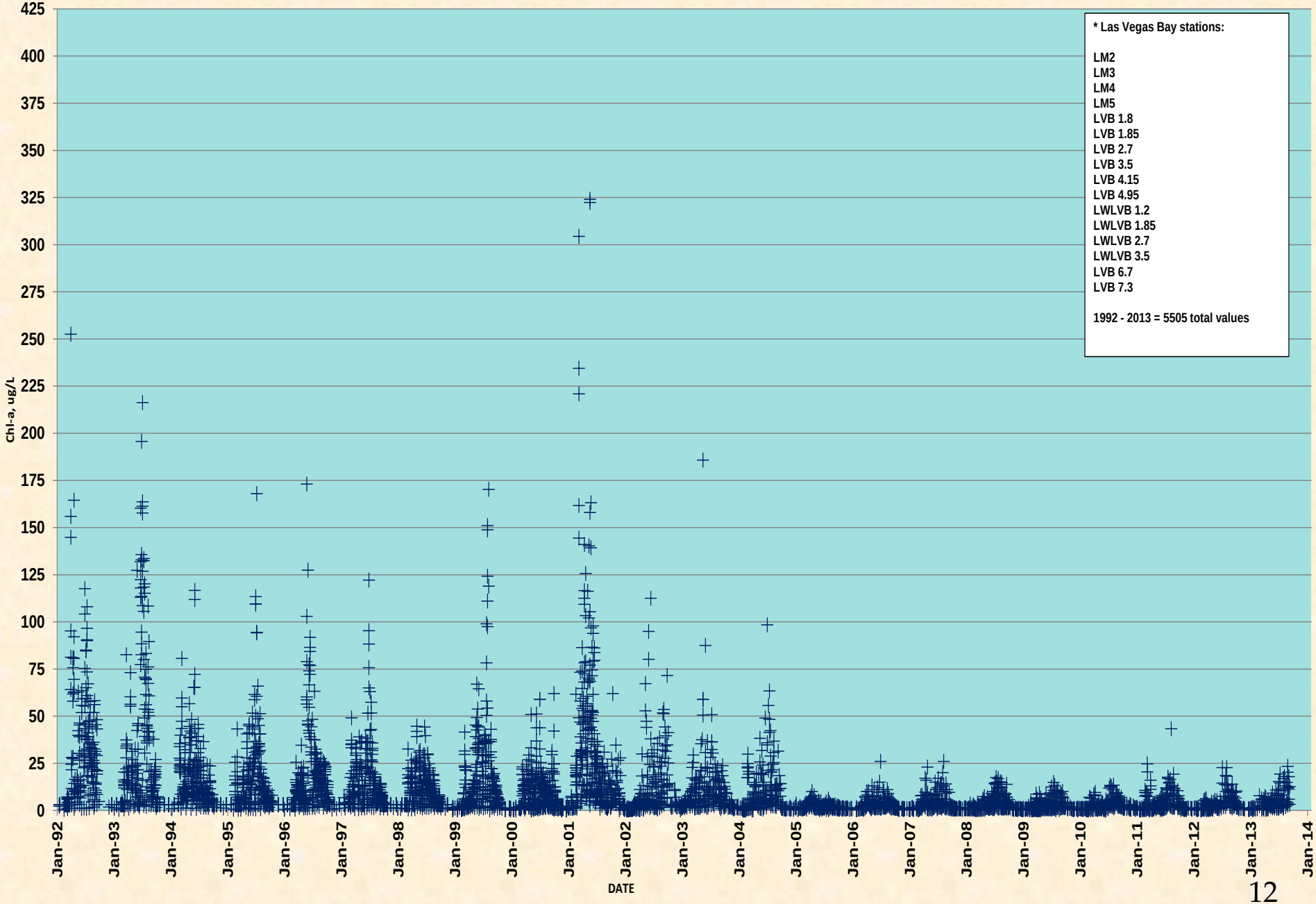
- Task Force reconvened in 2010 to study golden algae bloom in Lake Las Vegas and its potential impact on the Las Vegas Bay (Bay)
  - Seeding of the Bay with *Prymnesium parvum* is remotely feasible
  - Water quality conditions in the LV Bay are not favorable for growth of *Prymnesium parvum*

Wet Weather Total P Loadings

- Continues to be a potential cause (trigger) for algae blooms in the Las Vegas Bay
- Data collected in 2010 shows that Total P for storms appears to be quite large
- Data is still sparse, but needs to be considered
- Recommend more data be collected to characterize phosphorus loadings from storm flows
- Beware of warm spring rains!!


ESTIMATED DISCHARGERS' EFFLUENT AVERAGE DAILY TOTAL PHOSPHORUS
Discharged to Las Vegas Wash
Pounds per day
1956-1979
No Total P Removal
1980-1991
P removal initiated:
1mg/L effluent limit
1992-2001
8 month TMDL
P = 334 lbs/day
2002-2004
Vol. year-round Total P removal
2005-2013
Voluntary plant optimization for Total P removal
2001
Massive Algae Bloom
Total Phosphorus, Pounds Per Day
Flow, mgd
Date

Las Vegas Bay Chlorophyll-a, ug/L
1992-2013

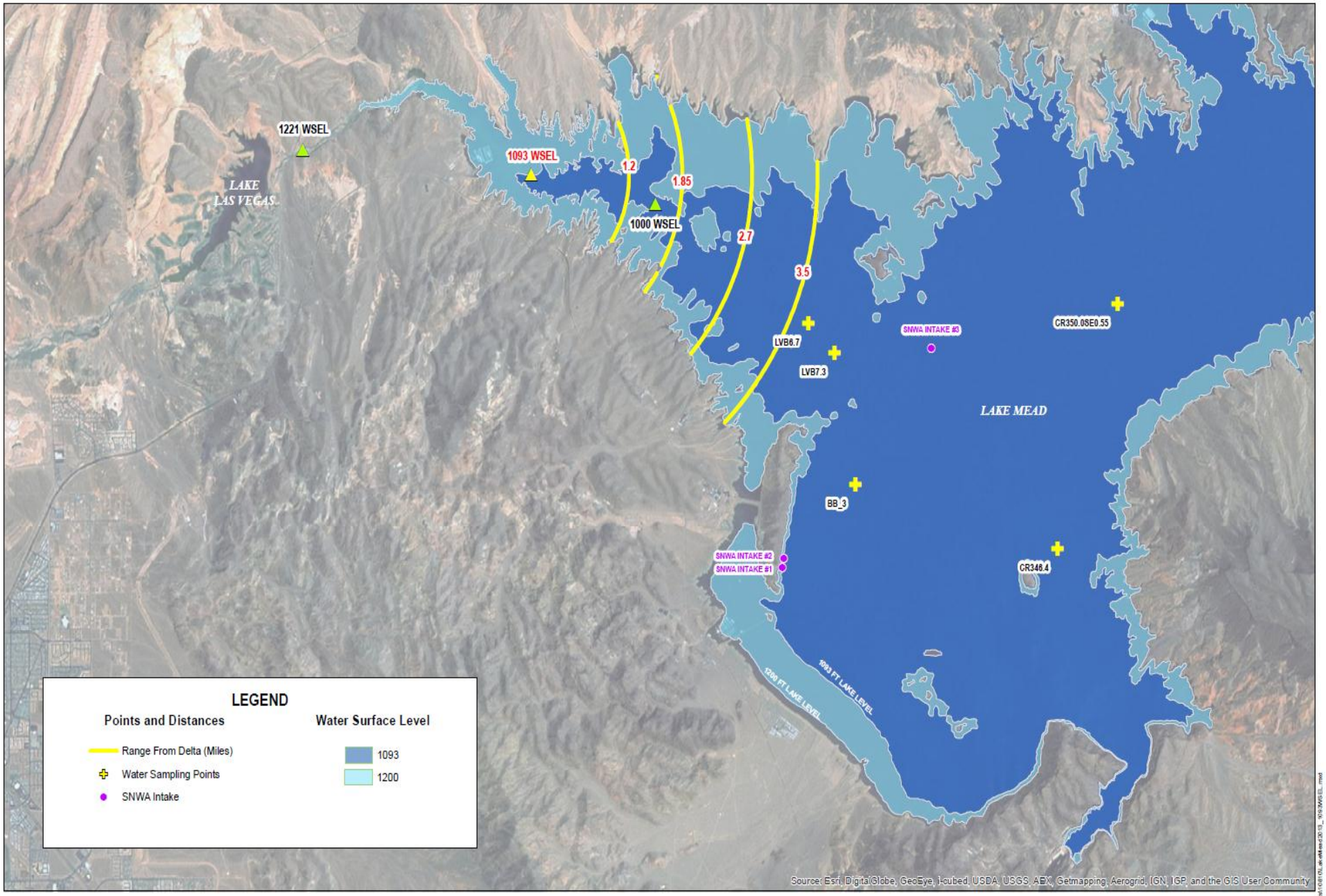


FUTURE VOLUME OF LAS VEGAS BAY

ELEVATION FEET	MILLION ACRE-FT	% CAPACITY
1223	1.09	100%
1200	0.88	81%
1100	0.35	32%
1075 (1ST shortage)	0.26	24%
1050 (2nd shortage)	0.20	18%
1025 (3rd shortage)	0.14	13%
1000 (re-evaluate after 1025)	0.10	9%

DISTANCE FROM LV WASH DELTA TO DRINKING WATER INTAKES

ELEVATION FEET	INTAKES #1 & #2 MILES	INTAKE #3 MILES
1093	6.5	5.5
1075	6.0	5.0
1050	5.5	4.5
1025	5.0	4.0
1000	4.5	3.5



Clark County Water Reclamation DISTRICT

LAS VEGAS WASH / BAY INTERFACE

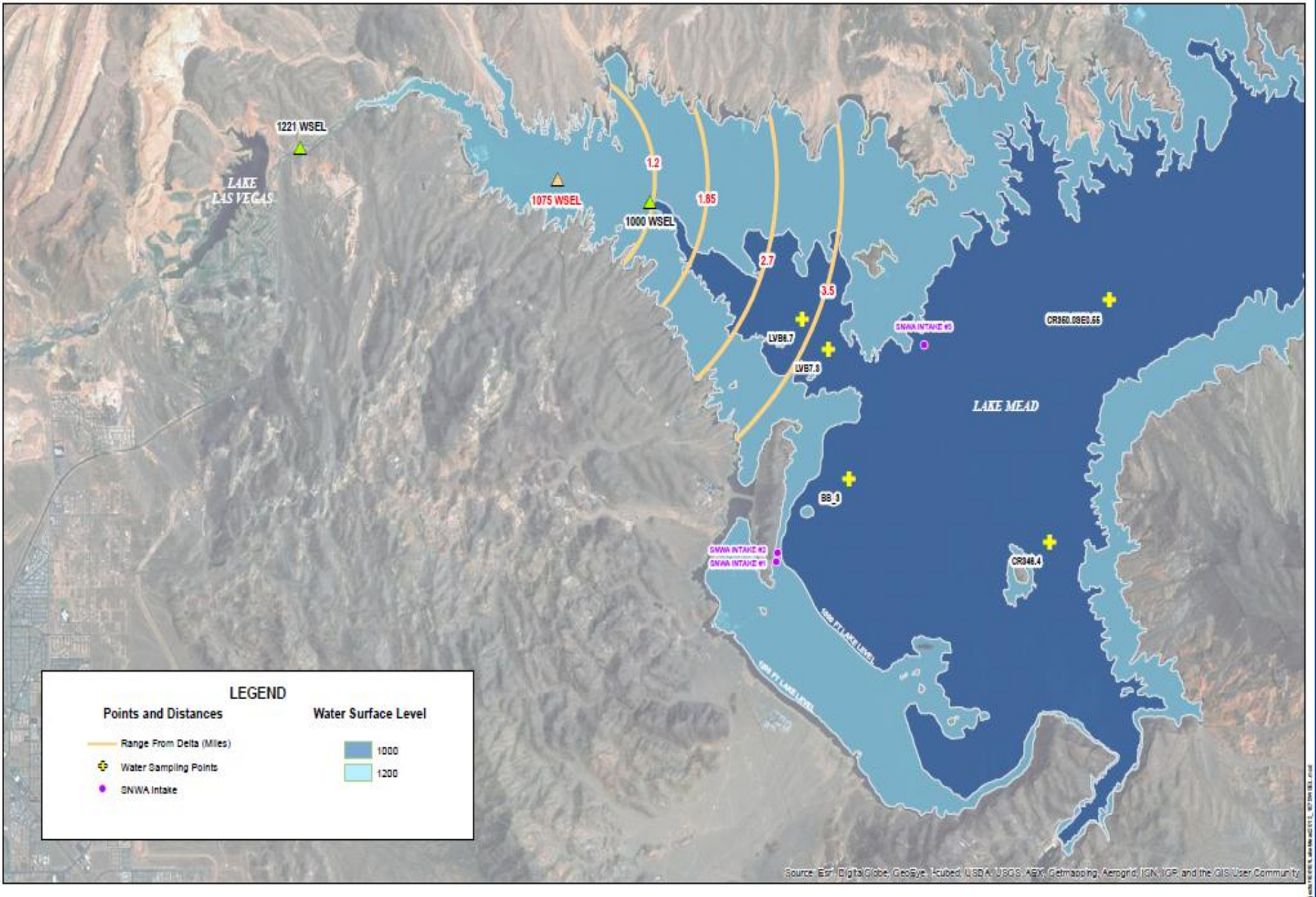
SPRING 2014 1093 WSEL WITH RANGES FROM DELTA

N W E S

1 in = 1 miles

0 0.5 1 2 Miles

MAP UPDATED 11/6/2013



Clark County Water Reclamation District

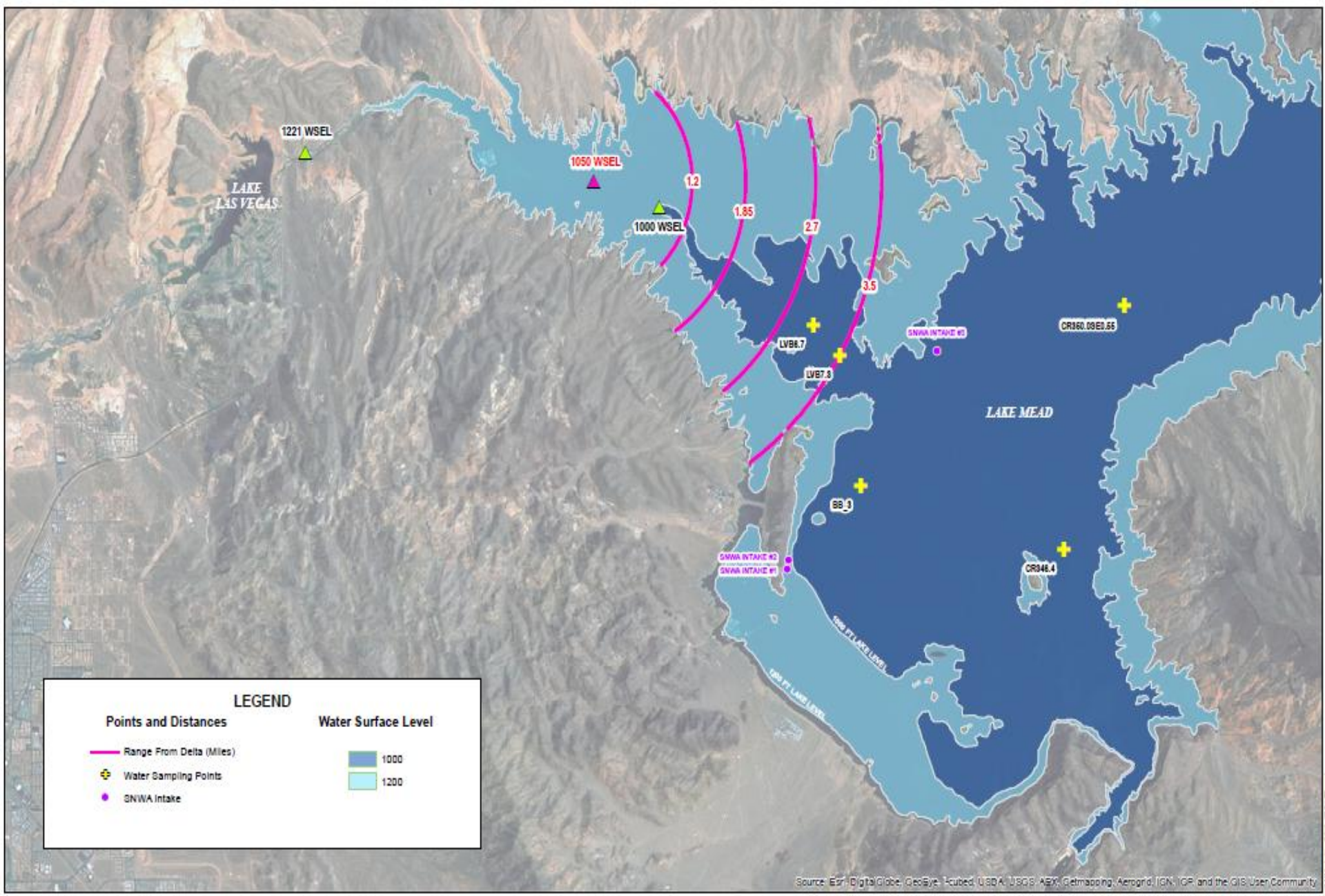
LAS VEGAS WASH / BAY INTERFACE

SUMMER 2015 1075 WSEL WITH RANGES FROM DELTA

1 in = 1 miles

0 0.5 1 2 Miles

MAP UPDATED 11/7/2013



Clark County Water Reclamation District

LAS VEGAS WASH / BAY INTERFACE

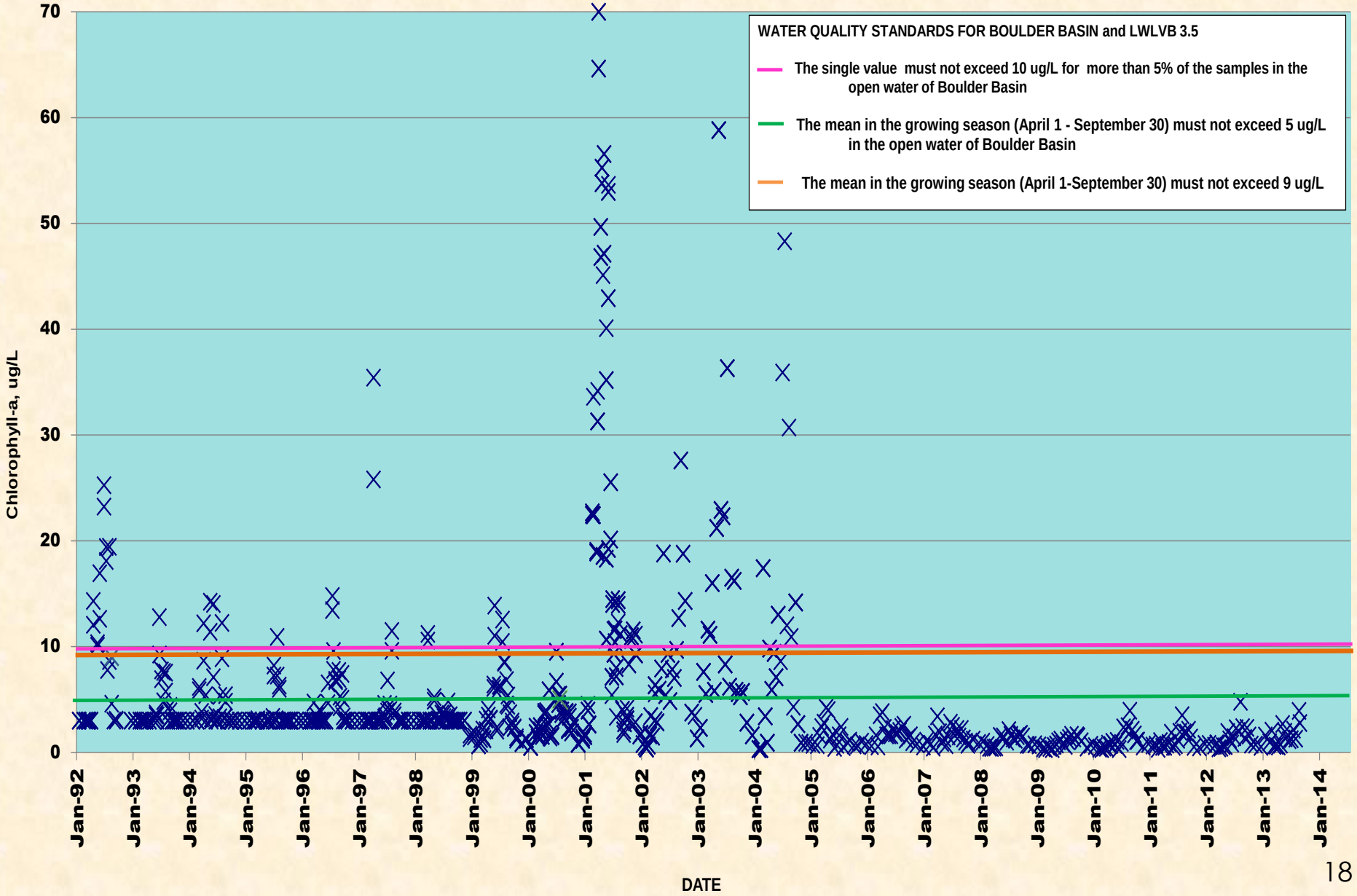
1050 WSEL WITH RANGES FROM DELTA

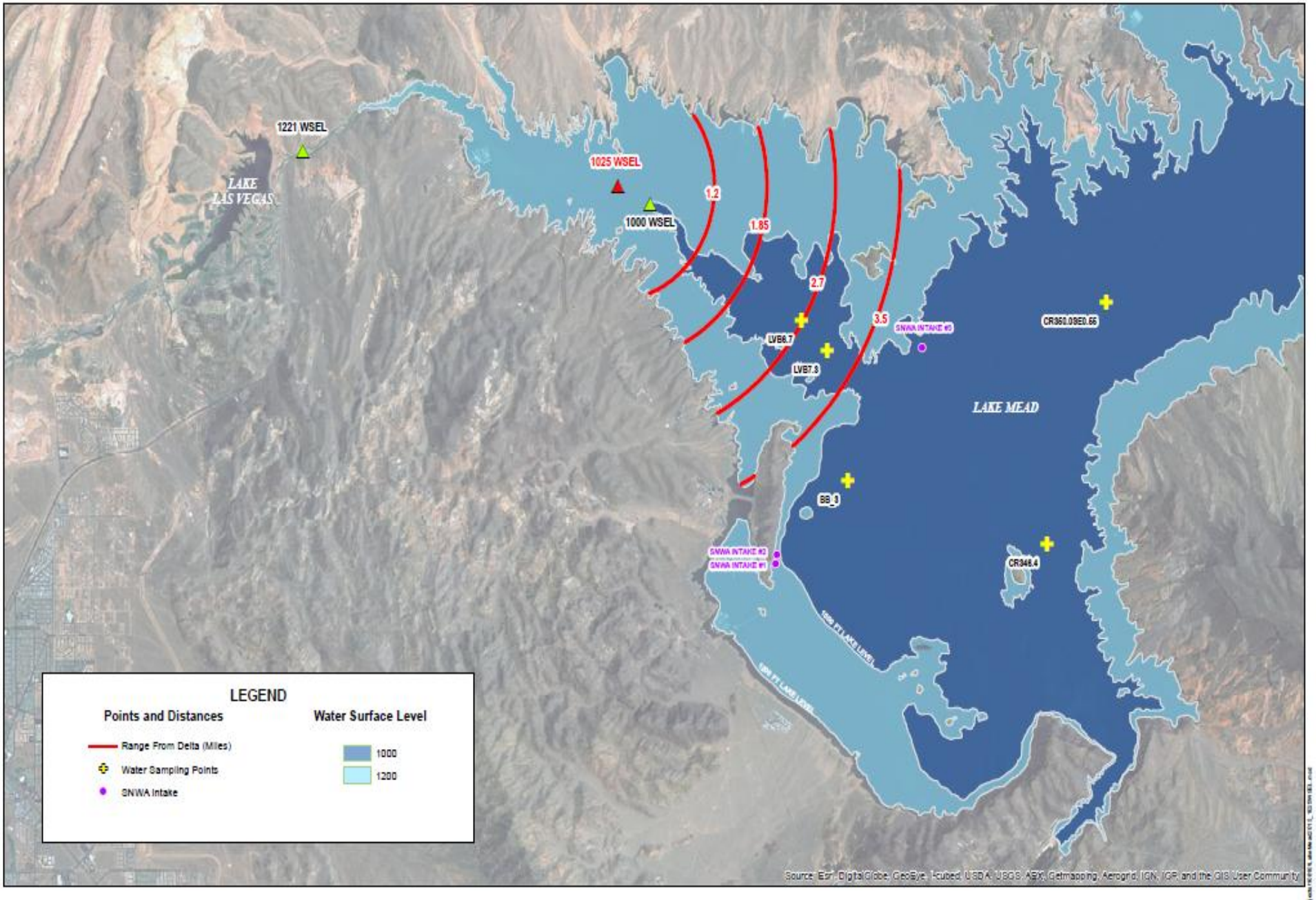
1 in = 1 miles

0 0.5 1 2 Miles

MAP UPDATED 11/7/2013

Boulder Basin Water Quality Standards with LWLVB 3.5 Chlorophyll-a Data





Clark County Water Reclamation District

LAS VEGAS WASH / BAY INTERFACE

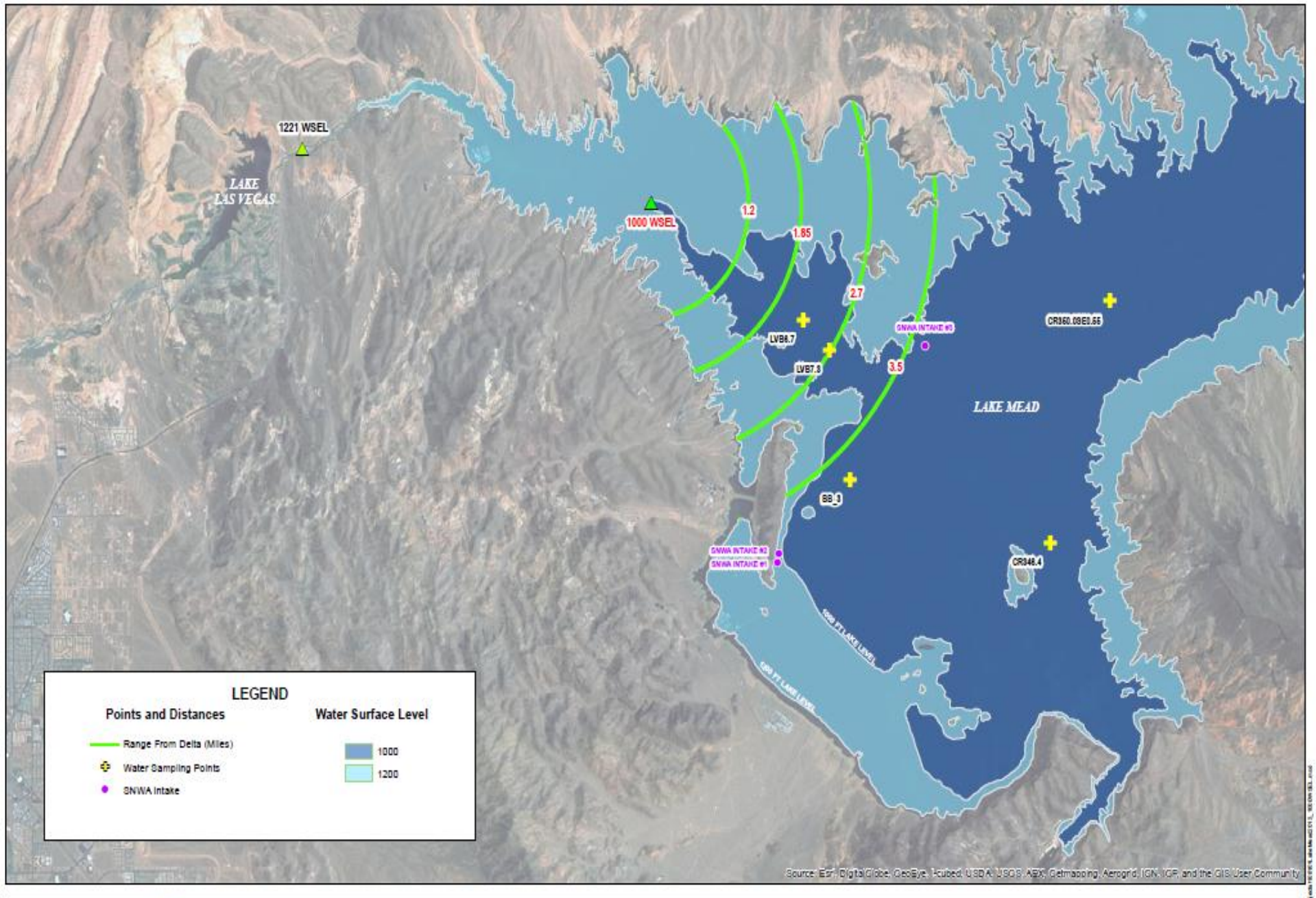
1025 WSEL WITH RANGES FROM DELTA

1 in = 1 miles

Miles

0 0.5 1 2

MAP UPDATED 11/7/2013



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LAS VEGAS WASH / BAY INTERFACE

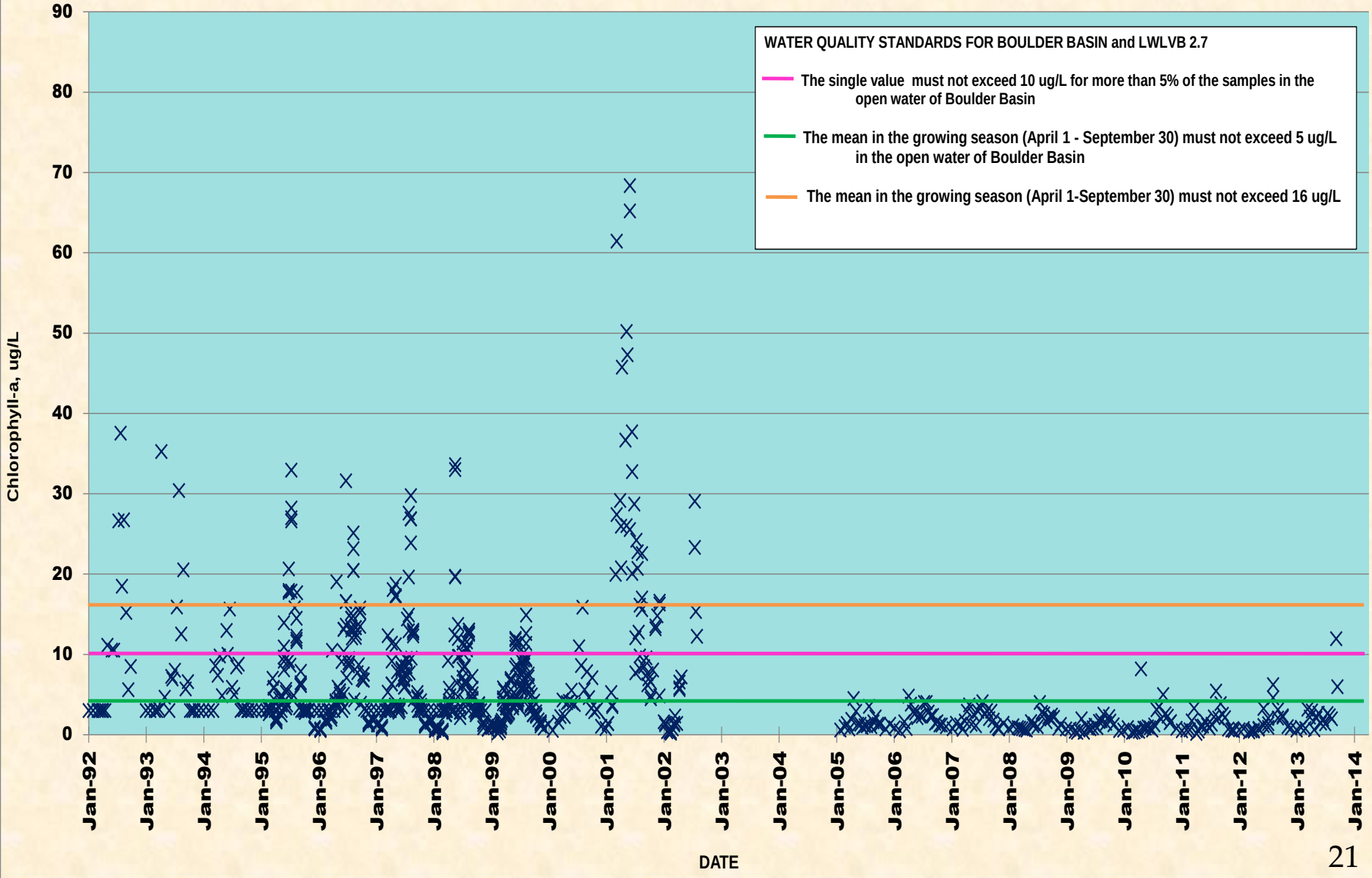
1000 WSEL WITH RANGES FROM DELTA

1 in = 1 miles

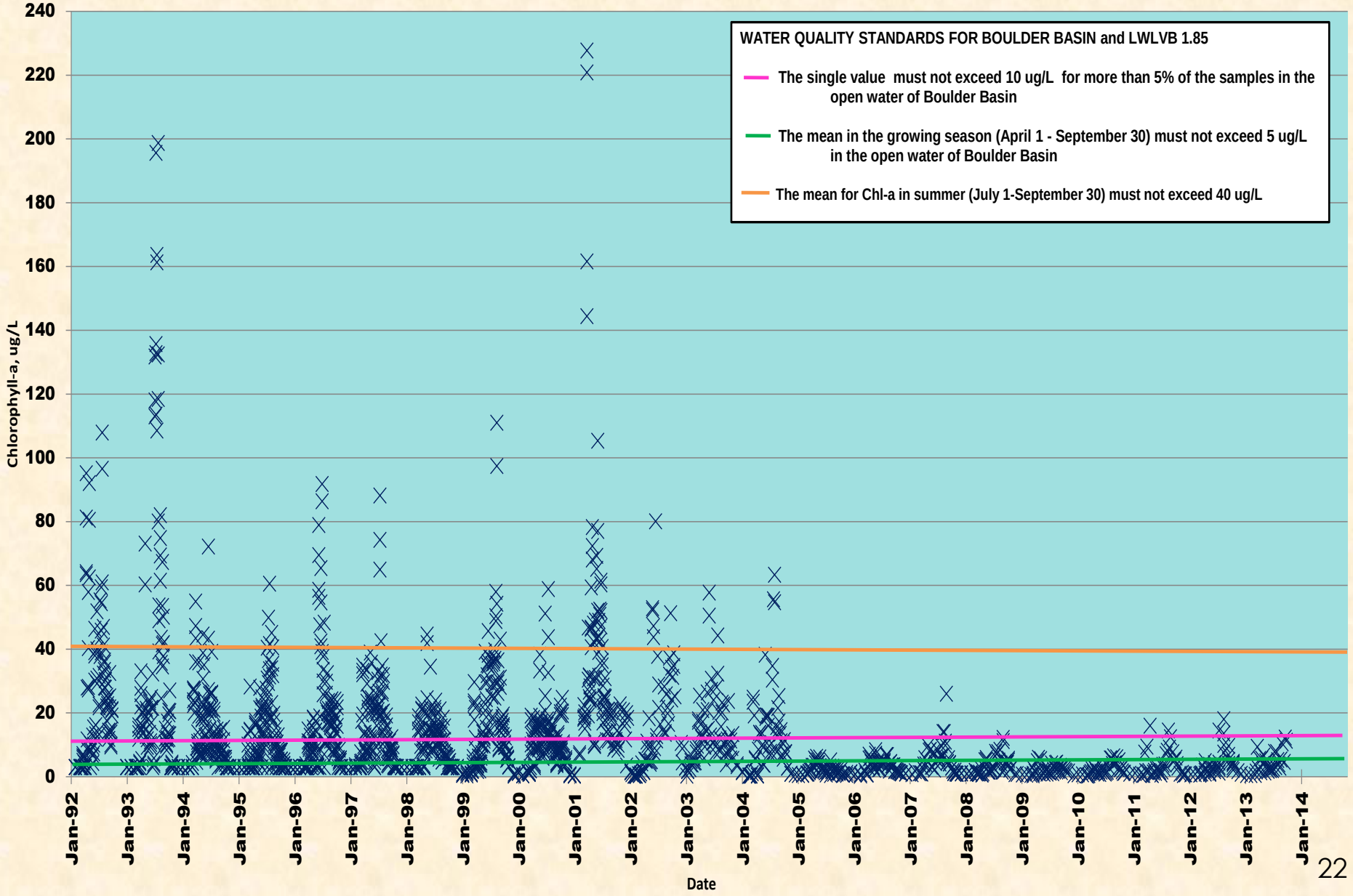
0 0.5 1 2 Miles

MAP UPDATED 11/7/2013

Boulder Basin Water Quality Standards with LWLVB 2.7 Chlorophyll-a Data



Boulder Basin Water Quality Standards with LWLVB 1.85 Chlorophyll-a Data



What should the monitoring plan be for the future?

QUESTIONS

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